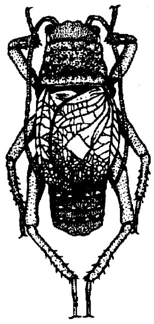
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A LIST OF BUTTERFLIES (LEPIDOPTERA, RHOPALOCERA) COLLECTED IN SOUTHERN PRIMORYE IN 1993*

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One hundred eighteen species of Rhopalocera species taken by the authors in Southern Primorye are listed with their collecting data. A brief account of the collecting sites and the notes about behavior of some butterflies based on the field observations are given as well.

KEY WORDS: Rhopalocera, faunistics, Southern Primorye.

М.Такахаши, М.Абэ, Р.Абэ, И.Амано, К.Йодое. Список дневных чешуекрылых (Lepidoptera, Rhopalocera), собранных в Южном Приморье в 1993 году // Дальневосточный энтомолог. 1995. N 8. С. 1-17.

Перечислены сто восемнадцать видов дневных чешуекрылых, собранных авторами в Южном Приморье. Дан краткий обзор мест сбора. Приведены заметки по поведению отдельных видов в природе, основанные на полевых наблюдениях.

* Report No. 47 from Russian/Japan Cooperative East Asian Entomological Program.

INTRODUCTION

We report a list of butterflies collected through the butterfly research belonging to the project "Russian/Japan Cooperative East Asian Entomological Program" in the Southern Primorye, from the 26th July to the 8th of August, 1993.

Through this project, since 1991, some entomological papers concerning with butterflies have been published in Japanese journals, e.g. Saigusa (1993), Saigusa & Yamane (1991), Sibatani (1991a-c, 1992), Sibatani, Saigusa & Hirowatari (1994) and Yodoé (1992, 1993). In those reports, Saigusa (1993) discussed the origin of the butterfly fauna of Primorye and the relations between the fauna of Primorye and that of Japan. Sibatani, Saigusa & Hirowatari (1994) revised the genus *Maculinea* van Ecke, 1915 (Lycaenidae) and described a new species *M. kurentzovi*. However, any butterfly lists have not been reported. Therefore, our list with collecting data will give a certain contribution to the investigation of the butterfly fauna of Primorye.

Collecting sites:

Vladivostok (89)**. Deciduous broad-leaved forest including e.g. *Quercus mongolica, Fraxinus mandshurica, Phellodendron amurense* and *Juglans mandshurica*. Alt. 40-120 m.

Okeanskaya (89). Around the road in the deciduous broad-leaved forest including e.g. *Populus davidiana, Ulmus laciniata, Alnus hirsuta* and *Phellodendron amurense* with undergrowth consisting of e.g. *Asarum sieboldii* and *Rabdosia exisa*. Alt. 40-80 m.

Lazurnyi (90). Near Lazurnaya Inlet, marshy land with *Carex sp.* and *Sanguisorba parviflora* and forest side. Alt. 1-2 m.

Knevichi (90). Near Vladivostok airport, roadside grass field. Alt. 10-20m.

Brovnichi (92). About 25 km NNW of Partizansk, along the river Tigrovaya, deciduous broad-leaved forest including e.g. *Populus davidiana, Acer mono, Syringa amurensis* and *Juglans mandshurica*. Alt. 160 m.

Lozovyi Range (92). 8 km eastward of Ekaterinovka, lime stone hills with sparse wood of e.g. *Quercus mongolica* and *Q. dentata,* and grass field including *Rabdosia exisa, Vicia cracca* and *Spodiopogon sibiricus*. Alt. 200-400 m.

Kazanka (92). 10 km NE of Partizansk, grass field around cultivated area, with e.g. *Spiraea salicifolia* and *Artemisia sp.* Alt. 150 m.

Sergeyevka (92). 30 km NE of Partizansk, grass land around village. Alt. 150 m.

Nakhodka (101). Roadside grass land. Alt. 10-20 m.

**Number in brackets shows the pages in: Primorsky Territory, topographical map, scale 1:200 000, Military Cartographic Printing House, Khabarovsk. 1992. 103 pp.

Slinkino (82). Roadside along the river Partizanskaya, deciduous broad-leaved forest including e.g. *Ulmus laciniata, Salix schwerinii* and *Rabdosia exisa*. Alt. 350 m.

Burelomnyi (83). Around the junction of the river Partizanskaya and Burelomnyi stream. Roadside grass land in the mixed coniferous-broad-leaved forest zone. Alt. 600 m.

Nizmenka (84). 20 km SE of Yasnoe, along a stream of Ussuri river, marshy land with sparse coniferous woods. Alt. 560 m.

Mt.Oblachnaya (84). Coniferous forest including *Abies* and *Picea* with grass plots, creeping pine *Pinus pumila* and alpine field. Alt. 1250-1730 m.

Upper Sobolinyi stream (84). Southern slope of Mt.Oblachnaya, cut over area in the coniferous forest with e.g. *Ligularia fischerii, Chamerion angustifolium* and *Rubus crataegifolius*. Alt. 700-900 m.

Nizhnii (84). The upper stream of the river Ussuri, 30 km SE of Yasnoe. Coniferous forest with *Abies* and *Picea*, roadside shrub and grass land including *Turritis glabra, Impatiens noli-tangere* and *Astragalus sp.* Alt. 600-680 m.

LIST OF SPECIES

The collector's names are abbreviated in the text as follows: AB-Azuma & Réiko Abé; AM-Ichiró Amano; TA-Mayumí Takáhashi; YO-Ken-íchiro Yodoé.

Hesperiidae

1. *Daimio tethys lineata* Mabille et Boullet, 1916

MATERIAL EXAMINED. 4 males, 2 females, Lozovyi Range, Aug.3-5 (AB, AM, TA).

2. *Pyrgus alveus speyeri* Staudinger, 1887

MATERIAL EXAMINED. 2 males, Sergeyevka, Aug.3 (AM, YO).

3. *Bibasis aquilina* (Speyer, 1879)

MATERIAL EXAMINED. 4 males, Okeanskaya, July 27 (AM, TA); 1 male, Brovnichi, July 28 (TA); 1 male, Lozovyi Range, Aug. 5 (AM).

4. *Satarupa nymphalis nymphalis* Speyer, 1879

MATERIAL EXAMINED. 1 male, Brovnichi, July 28 (TA).

A male was observed sucking water on the ground, being too sensitive to be difficult to capture.

5. *Heteropterus morpheus* (Pallas, 1771)

MATERIAL EXAMINED. 6 males,3 females, Nizhnii, Aug. 1-2 (AB, AM, TA, YO); 1 male, 2 females, Burelomnyi, July 29 (AB, TA, YO); 8 males, 2 females, Lasurnyi, Aug., 7 (AB, AM, TA, YO); 5 males, 4 females, Lozovyi Range, Aug. 3-5 (AB, AM, TA).

This butterfly prefers rather damp grass land.

6. *Aeromachus inachus inachus* (Ménétriès, 1859)

MATERIAL EXAMINED. 18 males, 1 female, Lozovyi Range, Aug. 3-5 (AB, AM, TA, YO).

Many males were observed sucking water on the ground. There was seen a plenty of its food plant, *Spodiopogon sibiricus* (Poaceae).

7. *Thymericus lineola lineola* (Ochsenheimer, 1808)

MATERIAL EXAMINED. 10 males, 2 females, Knevichi, Aug. 8 (AB, AM, TA, YO); 7 males, Lazurnyi, Aug. 7 (TA, YO).

8. *Thymericus sylvaticus sylvaticus* (Bremer, 1861)

MATERIAL EXAMINED. 1 male, Nizhnii, Aug. 1-2 (AB); 2 males, Burelomnyi, July 29 (YO); 1 female, 1 male, Vladivostok, July 26 (AM), Aug., 6 (AM); 19 males, 1 female, Lazurnyi, Aug. 7 (AB, AM, TA, YO); 7 males, Kazanka, July 29 (AB, TA, YO); 1 male, Brovnichi, July 28 (AM); 1 male, Brovnichi, July 29 (TA); 15 males, Lozovyi Range, Aug. 3-5 (AB, AM, TA, YO).

9. *Ochlodes venatus venatus* (Bremer et Grey, 1853)

MATERIAL EXAMINED. 1 male, Nizhnii, Aug.1 (AM); 2 male, Sergeyevka, Aug. 3 (YO); 6 males, Vladivostok, July 26 (AB, AM), Aug. 8 (AB); 2 males,1 female, Okeanskaya, July 27 (AB, TA); 4 males, 1 female, Lazurnyi, Aug. 7 (AM, TA); 1 male,1 female, Knevichi, Aug. 8 (AB, YO). 1 male, Kazanka, July 29 (YO); 9 males, 4 females, Lozovyi Range, Aug. 3-5 (AB, AM, TA).

10. *Ochlodes ochraceus ochraceus* (Bremer, 1861)

MATERIAL EXAMINED. 12 males, 9 females, Nizhnii, Aug. 1-2 (AB, AM, TA, YO); 12 males, Okeanskaya, July 27 (AB, AM, TA, YO); 1 male, Brovnichi, July 28 (AB); 4 males, 2 females, Lozovyi Range, Aug. 3-5 (AB, YO).

11. *Ochlodes subhyalinus subhyalinus* (Bremer et Grey, 1853)

MATERIAL EXAMINED. 6 males, 3 females, Vladivostok, July 26 (AB, AM, TA); 15 males, 2 females, Lozovyi Range, Aug. 3-5 (AB, AM, TA).

Territory behaviour of males was observed in the grass land of Lozovyi Range.

12. *Potanthus flavum flavum* (Murray, 1875)

MATERIAL EXAMINED. 1 male, Lazurnyi, Aug. 7 (YO); 9 males, 1 female, Lozovyi Range, Aug. 3-5 (AB, AM, TA, YO).

Papilionidae

13. *Papilio xuthus xuthus* Linnaeus, 1767

MATERIAL EXAMINED. 1 female, Vladivostok, Aug. 7 (YO).

14. *Papilio machaon ussuriensis* Sheljuzhko, 1910

MATERIAL EXAMINED. 1 male, Lozovyi Range, Aug. 3-5 (YO).

15. *Papilio maackii* Ménétriès, 1859

MATERIAL EXAMINED. 1 male, Burelomnyi, July 29 (YO); 2 males, Okeanskaya, July 27 (AM); 5 males, Brovnichi, July 28 (AB, AM, YO); 4 males, 4 females, Lozovyi Range, Aug. 3-5 (AB, AM, TA, YO).

Pieridae

16. *Leptidea morsei morsei* Fenton, 1881

MATERIAL EXAMINED. 1 male, Slinkino, Aug. 3 (YO); 4 males, 1 female, Vladivostok, July 26 (TA, YO); 5 males, 1 female, Kazanka, July 29 (AB, AM, TA, YO); 3 males, 4 females, Brovnichi, July 28 (AB, AM, YO); 25 males, 8 females, Lozovyi Range, Aug. 3-5 (AB, AM, TA, YO).

This butterfly was abundantly seen in the grass field of Lozovyi Range. The larvae probably feed on *Vicia cracca* growing plentifully in that area.

17. *Gonepteryx maxima amurensis* Graeser, 1888

MATERIAL EXAMINED. 1 male, Kazanka, July 29 (AB).

18. *Colias erate poliographus* Motschulsky, 1860

MATERIAL EXAMINED. 10 males, 6 females, Nizhnii, Aug. 1-2 (AB, AM, TA, YO); 4 males, 5 females, Upper Sobolinyi stream, Aug. 1-2 (AB, AM, TA, YO); 1 male, Burelomnyi, July 29 (AM); 2 males, Slinkino, Aug. 3 (AB, YO); 4 males, Vladivostok, July 26 (TA, YO), Aug. 7 (YO); 1 female, Okeanskaya, July 27 (AM); 11males, 7 females, Kazanka, July 29 (AB, TA, YO); 10 males, 5 females, Brovnichi, July 28 (AM, TA, YO); 4 males, Lozovyi Range, Aug. 3-5 (AB, TA, YO); 1 male, 1 female, Lazurnyi, Aug. 7 (TA, YO).

19. *Anthocharis cardamines koreana* Matsumura, 1937

MATERIAL EXAMINED. 21 larvae, Nizhnii, July 29 (AB, AM, TA, YO).

Many larvae were seen on the fluits and stems of *Turritis glabra* (Brassicaceae) on the sandy riverside of the upper stream of Ussuri River. Almost all these larvae were parasitized by Braconidae (Hymenoptera).

20. *Pontia daplidice orientalis* Kardakov, 1928

MATERIAL EXAMINED. 1 male, Burelomnyi, July 29 (AB); 1 male, Slinkino, Aug. 3 (YO); 1 female, Kazanka, July 29 (TA).

21. *Pieris rapae crucivora* Boisduval, 1836

MATERIAL EXAMINED. 3 males, 1 female, Slinkino, Aug. 3 (AB, AM, YO); 1 male, 1 female, Vladivostok, July 26 (TA); 2 males, 1 female, Lazurnyi, Aug. 7 (AB, TA, YO); 6 males, 3 female, Kazanka, July 29 (AB, AM, TA, YO).

22. *Pieris napi dulcinea* Butler, 1882

MATERIAL EXAMINED. 31 males, 6 females, Nizhnii, Aug. 1-2 (AB, AM, TA, YO); 3 males, 2 females, Upper Sobolinyi stream, Aug. 1-2 (AM, TA); 11 males, 1 female, Burelomnyi, July 29 (AB, AM, TA, YO); 1 male, Slinkino, Aug. 3 (AB); 2 females, Vladivostok, Aug. 7 (AM); 9 males,

Okeanskaya, July 27 (AB, AM, TA); 11 males, 2 females, Lozovyi Range, Aug. 3-5 (AB, AM, TA, YO).

23. ***Pieris melete orientis*** **Oberthür, 1880**

MATERIAL EXAMINED. 1 male, Nizhnii, Aug. 1 (TA); 1 male, Slinkino, Aug. 3 (AB); 2 males, Vladivostok, July 26 (AB). 25 males, 3 females, Lozovyi Range, Aug. 3-5 (AB, AM, TA, YO).

In Lozovyi Range, it was more abundant than the preceding species.

24. ***Aporia hippia hippia*** **Bremer, 1861**

MATERIAL EXAMINED. 13 males, 11 females, Nizhnii, Aug. 1-2 (AB, AM, TA, YO); 12 males, 2 females, Burelomnyi, July 29 (AB, AM, TA, YO); 3 males, 5 females, Slinkino, Aug. 3 (AB).

25. ***Aporia crataegi banghaasi*** **Brek, 1861**

MATERIAL EXAMINED. 9 males, Nizhnii, Aug. 1-2 (AM, TA, YO); 6 males, Burelomnyi, July 29 (AB, AM, YO).

Lycaenidae

26. ***Coreana raphaelis raphaelis*** **(Oberthür, 1880**

MATERIAL EXAMINED. 3 males, 2 females, Vladivostok, July 26 (AB, AM, TA); 3 females, Lozovyi Range, Aug. 3-5 (YO).

27. ***Ussuriana michaelis*** **(Oberthür, 1880)**

MATERIAL EXAMINED. 14 males, 6 females, Vladivostok, July 26 (AB, AM, TA, YO); 1 female, Lazurnyi, Aug. 7 (YO).

We observed many individuals flying in the evening with the preceding species on the hill top of Vladivostok.

28. ***Artopoetes pryeri*** **(Murray, 1873)**

MATERIAL EXAMINED. 7 males, Nizhnii, Aug. 1-2 (AB, YO); 1 female, Burelomnyi, July 29 (AM); 1 male, Vladivostok, July 26 (YO); 7 males, Okeanskaya, July 27 (AM, TA, YO); 1 male, 1 female, Vladivostok, Aug. 7 (AB).

29. ***Thecla betulae crassa*** **Leech, 1894**

MATERIAL EXAMINED. 1 male, Brovnichi, July 28 (TA).

30. ***Araragi enthea*** **(Janson, 1877)**

MATERIAL EXAMINED. 2 males, Vladivostok, Aug. 7 (YO); 1 female, Lazurnyi, Aug. 7 (AB).

31. ***Antigius attilia*** **(Bremer, 1861)**

MATERIAL EXAMINED. 1 female, Slinkino, Aug. 3 (AB); 1 male, Lazurnyi, Aug. 7 (YO).

32. ***Antigius butleri*** **(Fenton, 1881)**

MATERIAL EXAMINED. 1 male, Vladivostok, July 26 (TA); 1 male, 1 female, Lazurnyi, Aug. 7 (AB, AM, YO).

33. ***Neozephyrus japonicus regina*** **(Butler, 1881)**

MATERIAL EXAMINED. 1 male, 1 female, Vladivostok, Aug. 7 (AM); 1 male, 1 female, Lazurnyi, Aug. 7 (YO); 1 male, Brovnichi, July 28 (TA); 1 female, Lozovyi Range, Aug. 3-5 (AB).

34. ***Chrysozephyrus smaragdinus*** **(Bremer, 1861)**

MATERIAL EXAMINED. 6 males, Burelomnyi, July 29 (AB, AM); 1 female, Slinkino, Aug. 3 (TA); 1 male, Vladivostok, July 26 (TA); 1 male, Okeanskaya, July 27 (AB); 1 female, Lozovyi Range, Aug.5, AM.

35. ***Chrysozephyrus brillantinus brillantinus*** **(Staudinger, 1887)**

MATERIAL EXAMINED. 4 males, Lazurnyi, Aug. 7 (AM); 2 males, Lozovyi Range, Aug. 3-5 (AB).

36. ***Favonius taxila taxila*** **(Bremer, 1881)**

MATERIAL EXAMINED. 59 males, 4 females, Vladivostok, July 26 (AB, AM, TA, YO), Aug. 7 (AM); 1 male, Okeanskaya, July 27 (AM); 24 males, Lozovyi Range, Aug. 3-5 (AB, AM, TA, YO).

We observed a lot of males in territory activity in the afternoon on the hill slope of Vladivostok. In the sparse wood of Lozovyi Range, there were seen some males flying in their territory in the morning. Generally in Japan, this species has its territory flight in the morning.

37. ***Favonius korshunovi*** **(Dubatolov et Sergeev, 1982)**

MATERIAL EXAMINED. 1 male, Vladivostok, July 26 (AB); 3 males, Lozovyi Range, Aug. 5 (AM).

38. ***Favonius ultramarinus*** **(Fixsen, 1887)**

MATERIAL EXAMINED. 1 male, Lozovyi Range, Aug. 5 (AM).

39. ***Favonius latifasciatus ussuriensis*** **Murayama, 1960**

MATERIAL EXAMINED. 2 males, 1 female, Lozovyi Range, Aug. 3-5 (AB, YO).

40. ***Fixsenia pruni*** **(Linnaeus, 1758)**

MATERIAL EXAMINED. 2 females, Nizhnii, Aug. 1 (TA, YO).

41. ***Fixsenia herzi*** **(Fixsen, 1887)**

MATERIAL EXAMINED. 1 male, Nizhnii, Aug. 1 (TA); 1 female, Slinkino, Aug. 3 (YO); 1 male, Lazurnyi, Aug. 7 (YO).

42. ***Nordmannia prunoides*** **(Staudinger, 1887)**

MATERIAL EXAMINED. 1 male, Slinkino, Aug. 3 (AB).

43. ***Nordmannia w-album fentoni*** **(Butler, 1882)**

MATERIAL EXAMINED. 3 males, Nizhnii, Aug. 1-2 (AB, AM); 1 male, Mt. Oblachnaya, 1450-1730m, Aug. 2 (AM); 1 male, 1 female, Vladivostok, July 26 (AM).

44. ***Nordmannia eximia*** **(Fixsen, 1887)**

MATERIAL EXAMINED. 1 male, Vladivostok, Aug. 7 (AM); 5 males, Kazanka, July 29 (AB, TA).

45. *Thersamonolycaena dispar aurata* (Leech, 1887)

MATERIAL EXAMINED. 2 males, 2 females, Burelomnyi, July 29 (TA, YO).

46. *Everes argiades hellotia* Ménétriès, 1857

MATERIAL EXAMINED. 1 male, Burelomnyi, July 29 (AM); 2 males, Slinkino, Aug. 3 (AM, TA); 1 female, Vladivostok, July 26 (AM); 4 males, Sergeyevka , Aug. 3 (AB); 1 male, Vladivostok, Aug. 7 (TA); 2 males, Lazurnyi, Aug. 7 (TA); 3 males, 4 females, Brovnichi, July 28 (AM, TA); 9 males, 6 females, Kazanka, July 29 (AB, AM, TA, YO); 14 males, 1 female, Lozovyi Range, Aug. 3-5 (AB, AM, TA, YO); 1 male, Nakhodka, Aug. 6 (TA).

47. *Celastrina argiolus ladonides* (de l'Orza, 1867)

MATERIAL EXAMINED. 1 female, Nizhnii, Aug. 2 (AM); 1 male, Burelomnyi, July 29 (AB); 7 males, 2 females, Vladivostok, July 26 (AB, AM, TA, YO), Aug. 7 (AB); 1 male, 1 female, Lazurnyi, Aug. 7 (AM, YO); 4 males, Brovnichi, July 28 (TA); 1 female, Kazanka, July 29 (AB); 5 males, 1 female, Lozovyi Range, Aug. 3-5 (AM, TA, YO); 3 males, Knevichi, Aug. 8 (AB, AM, TA).

48. *Glaucopsyche lycormas happensis* Matsumura, 1927

MATERIAL EXAMINED. 4 females, Brovnichi, July 28 (AM); 1 male, Kazanka, July 29 (TA); 49 males, 16 females, Lozovyi Range, Aug. 3-5 (AB, AM, TA, YO).

This butterfly was abundantly found in the grass field of Lozovyi Range, where was seen *Vicia cracca* to be probably its food plant.

49. *Scolitantides orion orithyia* Grum-Grshimailo, 1891

MATERIAL EXAMINED. 4 males, 2 females, Knevichi, Aug. 8 (AB, TA, YO); 1 male, 1 female, Lozovyi Range, Aug. 3-5 (AB).

50. *Maculinea teleius euphemia* (Staudinger, 1887)

MATERIAL EXAMINED. 44 males, 11 females, Lozovyi Range, Aug. 3-5 (AB, AM, TA, YO).

Sanguisorba officinalis (Rosaceae) is probably the food plant in the early larval stage of this butterfly in Lozovyi Range, where it was abundantly seen in its habitat.

51. *Maculinea arionides arionides* (Staudinger, 1887)

MATERIAL EXAMINED. 10 males, Burelomnyi, July 29 (AB, AM, TA, YO); 2 males, 3 females, Slinkino, Aug. 3 (AM, TA, YO); 3 males, Vladivostok, Aug. 7 (AB, YO); 2 male, Brovnichi, July 28 (AM, YO); 19 males, 5 females, Lozovyi Range, Aug. 3-5 (AB, AM, TA, YO).

Takáhashi, one of the authors, observed a female ovipositing on an inflorescence of *Rabdosia exisa* (Lamiaceae), in the sparse wood of Lozovyi Range. The subspecies arionides was observed flying more rapidly in wider flight-territory, then the Japanese subspecies *M. a. takamukui* (Matsumura, 1919), sometimes over the trees.

52. ***Plebejus argus micrargus*** **(Butler, 1881)**

MATERIAL EXAMINED. 1 female, Sergeyevka, Aug. 3 (AB).

53. ***Lycaeides argyrognomen ussurica*** **Forster, 1936**

MATERIAL EXAMINED. 1male,1female, Nakhodka, Aug.6, AB.

54. ***Lycaeides subsolanus subsolanus*** **(Eversmann, 1851)**

MATERIAL EXAMINED. 1 male, Burelomnyi, July 29 (AM); 1 female, Kazanka, July 29 (AB); 14 males, Lozovyi Range, Aug. 3-5 (AB, AM, TA, YO).

55. ***Polyommatus icarus fuchsi*** **(Sheljuzhko, 1928)**

MATERIAL EXAMINED. 8 males, 4 females, Nizhnii, Aug. 2 (AB, AM, TA, YO).

56. ***Polyommatus tsvetaevi*** **(Kurenzov, 1970)**

MATERIAL EXAMINED. 7 males, Sergeyevka, Aug. 3 (AB, AM, TA); 14 males,7 females, Kazanka, July 29 (AB, AM, TA, YO); 1 male, 1 female, Nakhodka, Aug. 6 (AM, TA).

Sibatani (1991c) pointed out a problem on the taxonomy of *P. tsvetaevi* and suggested it was probably *P. boisduvalii* (Herrich-Schaffer, 1843). It is also necessary to investigate furthermore the relations between this species and *P. eros, P. eroides* and *P. erotides* respectively.

Nymphalidae

57. ***Argynnis paphia neopaphia*** **Fruhstorfer, 1907**

MATERIAL EXAMINED. 1 male, Mt. Oblachnaya, 1730m, Aug. 2 (AM); 7 males, 1 female, Nizhnii, Aug. 1-2 (AB, AM, TA, YO); 2 males, Upper Sobolinyi stream, Aug. 1-2 (AM, YO); 1 male, Vladivostok, Aug. 7 (AB); 1 male, Lazurnyi, Aug. 7 (TA); 6 males, 1 female, Lozovyi Range, Aug. 3-5 (AM, TA, YO).

58. ***Childrena zenobia penelope*** **(Staudinger, 1891)**

MATERIAL EXAMINED. 2 males, Lozovyi Range, Aug. 4-5 (TA, YO).

59. ***Damora sagana liana*** **(Fruhstorfer, 1907)**

MATERIAL EXAMINED. 1 male, Nizhnii, Aug. 1-2 (AB); 3 males, Lozovyi Range, Aug. 3-5 (AB, TA, YO).

60. ***Nephargynnis anadyomene obliterata*** **(Kardakov, 1928)**

MATERIAL EXAMINED. 1 male, Lozovyi Range, Aug. 3-5 (YO).

61. ***Fabriciana adippe*** **(Rottemburg, 1767)**

MATERIAL EXAMINED. 6 males, Lozovyi Range, Aug. 4-5 (AB, TA, YO).

62. ***Fabriciana niobe coredippe*** **(Leech, 1892)**

MATERIAL EXAMINED. 3 males, Upper Sobolinyi stream, Aug. 1-2 (AB, AM); 2 males, Lozovyi Range, Aug. 4-5 (AM).

63. *Fabriciana vorax* (Butler, 1871)

MATERIAL EXAMINED. 1 male, Nizhnii, Aug. 2 (YO); 1 male, Lozovyi Range, Aug. 4 (YO).

64. *Argyronome laodice ussurica* (Kardakov, 1928)

MATERIAL EXAMINED. 1 male, Upper Sobolinyi stream, Aug. 1 (AM); 1 female, Vladivostok, Aug. 7 (AB); 1 male, Lazurnyi, Aug. 7 (TA); 1 male, Kazanka, July 29 (AB); 13 males, Lozovyi Range, Aug. 3-5 (AB, AM, TA, YO).

65. *Argyronome ruslana ruslana* (Motschulsky, 1866)

MATERIAL EXAMINED. 1 male, Slinkino, Aug. 3 (AB); 11 males, 1 female, Lozovyi Range, Aug. 3-5 (AM, TA, YO).

We observed males sucking water on the ground with the preceding species in Lozovyi Range.

66. *Speyeria aglaja graeseri* (Kardakov, 1928)

MATERIAL EXAMINED. 3 males, Nizhnii, Aug. 1-2 (AM, TA, YO); 4 males, Upper Sobolinyi stream, Aug. 1-2 (AB, AM); 1 male, Burelomnyi, July 29 (AM); 1 male, Slinkino, Aug. 3 (AB); 7 males, 1 female, Lozovyi Range, Aug. 3-5 (AB, AM, TA).

67. *Brenthis ino tarnis* (Fruhstorfer, 1919)

MATERIAL EXAMINED. 7 males, 2 females, Nizhnii, Aug. 1-2 (AB, AM, YO); 1 male, Upper Sobolinyi stream, Aug. 1 (AM); 1 female, Nizmenka, July 29 (AM); 9 males, 1 female, Burelomnyi, July 29 (AB, AM, YO); 1 female, Slinkino, Aug. 3 (TA); 1 female, Brovnichi, July 28 (AM); 4 females, Lozovyi Range, Aug. 3-5 (AB, TA).

68. *Clossiana selenis chosensis* (Matsumura, 1927)

MATERIAL EXAMINED. 1 male, Burelomnyi, July 29 (AM); 1 male, 1 female, Kazanka, July 29 (TA).

69. *Clossiana perryi* (Butler, 1882)

MATERIAL EXAMINED. 5 males, Sergeyevka, Aug. 3 (YO); 1 male, Kazanka, July 29 (AM); 15 males, Lazurnyi, Aug. 7 (AB, AM, TA, YO).

Many males were observed flying slowly in the marshy field of Lazurnyi. They are probably the imagos of the second brood.

70. *Clossiana euphrosyne orphana* (Fruhstorfer, 1907)

MATERIAL EXAMINED. 1 male, Upper Sobolinyi stream, Aug. 1 (AM).

71. *Clossiana thore hyperusia* (Fruhstorfer, 1907)

MATERIAL EXAMINED. 1 female, Upper Sobolinyi stream, Aug. 1 (AM); 2 females, Burelomnyi, July 29 (AB, TA).

72. *Mellitaea ambigua mandschurica* (Fixsen, 1887)

MATERIAL EXAMINED. 1 male, 1 female, Lozovyi Range, Aug. 3-5 (AB, TA).

73. *Araschnia levana wladimiri* Kardakov, 1928

MATERIAL EXAMINED. 1 female, Nizhnii, Aug. 1 (AM); 3 females,

Slinkino, Aug. 3 (AB, TA); 1 male, Okeanskaya, July 27 (AM); 1 female, Brovnichi, July 28 (AM); 2 females, Lazurnyi, Aug. 7 (AB, TA).

74. *Araschnia burejana burejana* f. *fallax* Janson, 1882

MATERIAL EXAMINED. 1 male, 1 female, Nizhnii, Aug. 1-2 (AB, AM); 1 female, Slinkino, Aug. 3 (AB).

75. *Polygonia c-aureum c-aureum* (Linnaeus, 1758)

MATERIAL EXAMINED. 1 male, Vladivostok, Aug. 7 (AM); 4 males, 3 females, Kazanka, July 29 (AB, TA, YO); 1 female, Brovnichi, July 28 (AM); 1 female, Lazurnyi, Aug. 7 (TA).

76. *Polygonia c-album hamigera* (Butler, 1887)

MATERIAL EXAMINED. 3 males, 1 female, Nizhnii, Aug. 1-2 (TA); 1 male, Burelomnyi, July 29 (AM); 4 males, Slinkino, Aug. 3 (YO); 2 males, Lozovyi Range, Aug. 3-5 (TA).

77. *Nymphalis l-album* (Esper, 1780)

MATERIAL EXAMINED. 1 male, 1 female, Nizhnii, Aug. 1-2 (AM, TA, YO); 1 male, Mt. Oblachnaya, 1450-1730m, Aug. 2 (AM); 1 male, 1 female, Upper Sobolinyi stream, Aug. 1 (TA); 4 males, Burelomnyi, July 29 (AB, AM, TA); 1 male, Slinkino, Aug. 3 (AM); 1 male, Okeanskaya, July 27 (AM); 1 male, Kazanka, July 29 (YO); 4 male, 1 female, Lozovyi Range, Aug. 3-5 (AB, AM, TA).

78. *Aglais urticae eximia* (Sheljuzhko, 1919)

MATERIAL EXAMINED. 16 males, 2 females, Nizhnii, Aug. 1-2 (AB, AM, TA, YO); 3 males, 1 female, Mt. Oblachnaya, 1250-1730m, Aug. 2 (AB, AM, TA); 10 males, Upper Sobolinyi stream, Aug. 1-2 (AM, TA); 2 males, 1 female, Burelomnyi, July 29 (AM, TA, YO); 1 male, Slinkino, Aug. 3 (YO).

79. *Inachis io geisha* (Stichel, 1908)

MATERIAL EXAMINED. 2 males, Nizhnii, Aug. 1-2 (TA, YO); 1 male, Slinkino, Aug. 3 (YO); 10 males, Lozovyi Range, Aug. 3-5 (AB, AM, TA, YO).

80. *Vanessa indica indica* (Herbst, 1784)

MATERIAL EXAMINED. 1 male, Vladivostok, Aug. 7 (AM).

81. *Cynthia cardui cardui* (Linnaeus, 1758)

MATERIAL EXAMINED. 1 female, Vladivostok, July 26 (YO).

82. *Limenitis populi ussuriensis* Staudinger, 1887

MATERIAL EXAMINED. 1 female, Slinkino, Aug. 3 (YO).

83. *Ladoga camilla japonica* (Ménétriès, 1857)

MATERIAL EXAMINED. 5 male, 1 female, Nizhnii, Aug. 1-2 (AB, AM, TA, YO).

84. *Ladoga helmanni duplicata* (Staudinger, 1892)

MATERIAL EXAMINED. 1 male, Nizhnii, Aug. 1 (AM); 1 male, 2 females, Slinkino, Aug. 3 (AB, TA); 2 males, 3 females, Lozovyi Range, Aug. 3-5 (AB, AM, TA); 1 female, Vladivostok, Aug. 7 (AM).

85. ***Ladoga doerriesi*** **(Staudinger, 1892)**

MATERIAL EXAMINED. 1 male, Okeanskaya, July 27 (YO); 1 female, Lazurnyi, Aug. 7 (AM); 12 males, 1 female, Kazanka, July 29 (AB, AM, TA, YO); 1 male, Brovnichi, July 28 (TA); 2 females, Lozovyi Range, Aug. 3-5 (AB).

86. ***Ladoga amphissa*** **(Ménétriès, 1857)**

MATERIAL EXAMINED. 2 females, Slinkino, Aug. 3 (TA); 1 male, Okeanskaya, July 27 (AB); 2 females, Kazanka, July 29 (AB, AM).

87. ***Ladoga homeyeri homeyeri*** **(Tancré, 1881)**

MATERIAL EXAMINED. 3 males, 2 females, Nizhnii, Aug. 1-2 (AB, AM); 1 female, Burelomnyi, July 29 (AM).

88. ***Ladoga moltrechti*** **(Kardakov, 1928)**

MATERIAL EXAMINED. 1 female, Slinkino, Aug. 3 (TA); 1 female, Brovnichi, July 28 (TA).

89. ***Ladoga sydyi*** **(Kindermann in Lederer, 1853)**

MATERIAL EXAMINED. 1 male, Burelomnyi, July 29 (YO); 1 female, Slinkino, Aug. 3 (YO).

90. ***Seokia pratti eximia*** **(Moltrecht, 1909)**

MATERIAL EXAMINED. 1 male, Slinkino, Aug. 3 (AM).

A fresh male was captured flying near the ground for sucking water.

91. ***Neptis philyra philyra*** **Ménétriès, 1859**

MATERIAL EXAMINED. 1 ex., Burelomnyi, July 29 (YO); 1 male, 3 females, Slinkino, Aug. 3 (AM, TA, YO); 1 female, Vladivostok, Aug. 7 (AB); 2 females, Okeanskaya, July 27 (AM, YO); 1 female, Lozovyi Range, Aug. 3-5 (AB).

92. ***Neptis philyroides philyroides*** **Staudinger, 1887**

MATERIAL EXAMINED. 3 females, Slinkino, Aug. 3 (AM, TA); 1 female, Okeanskaya, July 27 (AM); 1 female, Kazanka, July 29 (AM).

93. ***Neptis alwina alwina*** **(Bremer et Grey, 1853)**

MATERIAL EXAMINED. 4 females, Vladivostok, Aug. 7 (TA, YO); 1 female, Lazurnyi, Aug. 7 (YO); 1 female, Kazanka, July 29 (AB); 1 male, Lozovyi Range, Aug. 3-5 (AB).

94. ***Neptis thisbe deliquata*** **Stichel, 1908**

MATERIAL EXAMINED. 1 male, Nizhnii, Aug. 1-2 (AB); 2 females, Slinkino, Aug. 3 (TA, YO); 1 female, Lazurnyi, Aug. 7 (AM); 2 males, Lozovyi Range, Aug. 3-5 (AM, TA).

95. ***Neptis themis ilos*** **Fruhstorfer, 1908**

MATERIAL EXAMINED. 1 male, Okeanskaya, July 27 (TA); 1 female, Lazurnyi, Aug. 7 (AM); 1 female, Lozovyi Range, Aug. 3-5 (TA).

The species 91-95 of the genus *Neptis* were in the end of their adult season.

96. ***Neptis sappho intermedia*** **Pryer, 1877**

MATERIAL EXAMINED. 2 females, Slinkino, Aug. 3 (AB, YO); 7 males,

4 females, Lozovyi Range, Aug. 3-5 (AB, AM, TA).

97. *Neptis pryeri andetria* Fruhstorfer in Seitz, 1909

MATERIAL EXAMINED. 8 males, 3 females, Nizhnii, Aug. 1-2 (AB, AM, TA, YO); 4 males, 1 female, Burelomnyi, July 29 (TA, YO); 4 males, 3 females, Slinkino, Aug. 3 (AB, AM, TA, YO); 2 males, Vladivostok, July 26 (AB); 2 males, Okeanskaya, July 27 (TA, YO); 1 female, Lazurnyi, Aug. 7 (AM).

98. *Neptis rivularis magnata* Heyne in Rühl, 1895

MATERIAL EXAMINED. 4 males, 1 female, Nizhnii, Aug. 1-2 (TA, YO); 1 male, Mt. Oblachnaya, 1450-1730m, Aug. 2 (AM); 1 male, 1 female, Burelomnyi, July 29 (AM, YO); 1 male, 1 female, Slinkino, Aug. 3 (AB, YO).

99. *Aldania raddei* (Bremer, 1861)

MATERIAL EXAMINED. 1 male, Slinkino, Aug. 3 (TA).

A very spoiled male was captured flying near the ground for sucking water.

100. *Apatura iris amurensis* Stichel, 1909

MATERIAL EXAMINED. 2 males, Nizhnii, Aug. 1-2 (TA, YO); 2 males, Slinkino, Aug. 3 (AM, TA); 3 males, Lozovyi Range, Aug. 3-5 (AM, TA, YO).

101. *Apatura ilia ussuriensis* Kurentzov, 1937

MATERIAL EXAMINED. 4 males, Nizhnii, Aug. 1-2 (AB); 4 males, Burelomnyi, July 29 (AB, AM, TA); 18 males, Slinkino, Aug. 3 (AB, AM, TA, YO); 1 male, Okeanskaya, July 27 (AM); 1 male, Lozovyi Range, Aug. 3-5 (YO).

Observed material includes as the brown so black-white forms.

102. *Apatura metis substituta* Butler, 1873

MATERIAL EXAMINED. 37 males, Nizhnii, Aug. 1-2 (AB, AM, TA, YO); 1 male, Burelomnyi, July 29 (TA); 9 males, Slinkino, Aug. 3 (AM, TA, YO); 1 male, Kazanka, July 29 (AB); 4 males, Lozovyi Range, Aug. 3-5 (AB, YO).

All specimens collected belong to the brown form.

103. *Athymodes nycteis cassiope* (Ménétriès, 1859)

MATERIAL EXAMINED. 2 males, Nizhnii, Aug. 1 (AB); 2 males, Burelomnyi, July 29 (YO).

104. *Amuriana schrenckii schrenckii* (Ménétriès, 1859)

MATERIAL EXAMINED. 13 males, Nizhnii, Aug. 1-2 (AB, AM, TA, YO); 1 male, Burelomnyi, July 29 (AM); 2 males, Slinkino, Aug. 3 (YO); 6 males, 1 female, Okeanskaya, July 27 (AM, TA, YO); 42 males, 1 female, Brovnichi, July 28 (AB, AM, TA, YO); 2 males, Lozovyi Range, Aug. 3-5 (TA, YO).

This butterfly was seen flying from early morning till evening and flying even in rainy weather. We observed many males in female-searching from twig to twig on the elm tree, *Ulmus japonica*. Some fresh males were found on the ground to suck juice from the excrements of animals.

Satyridae

105. *Ninguta schrencki* (Ménétriès, 1858)

MATERIAL EXAMINED. 12 males, 5 females, Slinkino, Aug. 3 (AB, AM, TA, YO); 4 males, 1 female, Brovnichi, July 28 (AB, AM, TA, YO); 3 males, Lazurnyi, Aug. 7 (TA, YO).

106. *Lethe marginalis maacki* Bremer, 1861

MATERIAL EXAMINED. 1 male, Vladivostok, July 26 (YO); 1 male, 1 female, Brovnichi, July 28 (AB); 7 males, 7 females, Lozovyi Range, Aug. 3-5 (AM, TA, YO).

107. *Ypthima amphithea* (Ménétriès, 1859)

MATERIAL EXAMINED. 8 males, 5 females, Lazurnyi, Aug. 7 (AB, TA, YO).

This butterfly was found around the marshy field of Lazurnyi. The flight is rather rapid and more seldom settling, while the closely related species in Japan, *Y. motschulskyi*, flies more slowly and frequently rests on the leaves.

108. *Ypthima argus hampeia* Fruhstorfer, 1911

MATERIAL EXAMINED. 1 male, 1 female, Nizhnii, Aug. 1-2 (TA, YO); 3 males, 2 females, Vladivostok, July 26 (TA, YO), Aug. 7 (AB); 4 males, 1 female, Okeanskaya, July 27 (AM, YO); 2 males, 1 female, Brovnichi, July 28 (AM, TA); 3 males, Lozovyi Range, Aug. 3-5 (AB, AM).

109. *Aphanthopus hyperanthus* (Linnaeus, 1758)

MATERIAL EXAMINED. 12 males, 3 females, Nizhnii, Aug. 1-2 (AB, AM, TA, YO); 1 male, Upper Sobolinyi stream, Aug. 1 (TA); 1 male, Nizmenka, July 29 (AM); 6 males, 2 females, Burelomnyi, July 29 (AM, TA, YO); 19 males, 7 females, Vladivostok, July 26 (AB, AM, TA, YO), Aug. 7 (AM, TA); 1 male, Okeanskaya, July 27 (AM); 5 males, Lazurnyi, Aug. 7 (AB); 1 male, Brovnichi, July 28 (YO); 1 female, Kazanka, July 29 (TA); 1 male, 3 females, Lozovyi Range, Aug. 3-5 (AM, TA); 1 female, Nakhodka, Aug. 6 (TA).

110. *Kirinia epimenides* (Ménétriès, 1859)

MATERIAL EXAMINED. 3 males, 1 female, Nizhnii, Aug. 1-2 (AM, YO); 1 male, Burelomnyi, July 29 (AB0; 5 males, Slinkino, Aug. 3 (AB, AM, YO); 1 female, Vladivostok, Aug. 6 (AM); 5 males, Brovnichi, July 28 (AM, TA, YO); 4 males, 2 females, Lozovyi Range, Aug. 3-5 (AB, AM).

111. *Kirinia epaminondas* (Staudinger, 1887)

MATERIAL EXAMINED. 1 male, Vladivostok, Aug. 6 (AM); 22 males, 6 females, Lazurnyi, Aug. 7 (AB, AM, TA, YO); 1 male, Brovnichi, July 28 (TA); 4 males, Kazanka, July 29 (AB, TA); 1 male, 1 female, Lozovyi Range, Aug. 3-5 (TA, YO).

This butterfly was seen around the shrubs in the open field and in the

marginal area of the marshy land, while the preceding species was found in the wood land.

112. *Lopinga achine achinoides* (Butler, 1878)

MATERIAL EXAMINED. 14 males, 4 females, Nizhnii, Aug. 1-2 (AB, AM, TA, YO); 2 males, 2 females, Mt. Oblachnaya, 900-1450m Aug. 2 (AB, AM); 3 males, Upper Sobolinyi stream, Aug. 1-2 (TA, YO); 1 male, 1 female, Burelomnyi, July 29 (AB, AM, YO); 1 male ,8 females, Vladivostok, July 26 (AM, TA, YO); 1 male, 8 females, Okeanskaya, July 27 (AB, AM, TA, YO); 5 females, Lazurnyi, Aug. 7 (AM, TA, YO); 1 male, Kazanka, July 29 (AB); 4 males, 1 female, Lozovyi Range, Aug. 3-5 (AB, AM, TA).

113. *Lasiommata deidamia erebina* (Butler, 1883)

MATERIAL EXAMINED. 20 males, 6 females, Nizhnii, Aug. 1-2 (AM, TA, YO); 6 males, 3 females, Mt. Oblachnaya, 1000-1450m, Aug. 2 (AB, AM, TA); 16 males, 9 females, Upper Sobolinyi stream, Aug. 1-2 (AB, AM, TA, YO); 1 male, Lozovyi Range, Aug. 5 (TA).

This butterfly was frequently found along the roadside in the coniferous forest zone and also around the vegetation of the tall-stemed herbaceous plants, such as *Ligularia, Cacalia* and *Chamerion* near the forest line of Oblachnaya mountain.

114. *Melanargia halimede halimede* Ménétriès, 1859

MATERIAL EXAMINED. 1 female, Nizhnii, Aug. 1-2 (AB); 3 males, 2 females, Lazurnyi, Aug. 7 (AB, TA); 2 females, Knevichi, Aug. 8 (AB); 12 males, 9 females, Kazanka, July 29 (AB, AM, YO); 2 males, Brovnichi, July 28-29 (TA); 3 males, Lozovyi Range, Aug. 3-5 (AM, TA).

Takáhashi observed a female ovipositing on the inflorescence of *Hordeum sp.* (Poaceae) at sunny lane of Lozovyi Range.

115. *Melanargia epimede epimede* Staudinger, 1887

MATERIAL EXAMINED. 7 males, 3 females, Slinkino, Aug. 3 (AB, YO); 25 males, 5 females, Vladivostok, July 26 (AB, AM, TA, YO), Aug. 6 (AM). Aug. 7(TA); 8 males, Okeanskaya, July 27 (AM, TA); 1 male, 6 females, Lazurnyi, Aug. 7 (AB, AM, TA); 6 males, 1 female, Brovnichi, July 28 (AM, TA, YO); 1 male, 1 female, Kazanka, July 29 (AB); 9 males, 4 females, Lozovyi Range, Aug. 3-5 (AB, AM, TA, YO).

This species prefers the wood land, while the preceding one always inhabits the open field.

116. *Coenonympha hero perseis* Lederer, 1853

MATERIAL EXAMINED. 1 female, Burelomnyi, July 29 (AB).

117. *Coenonympha oedippus annulifer* Butler, 1877

MATERIAL EXAMINED. 23 males, 11 females, Lazurnyi, Aug. 7 (B, AM, TA, YO); 1 female, Lozovyi Range, Aug. 4 (AM).

This butterfly was abundantly seen in the marshy field with *Carex* vegetation in Lazurnyi.

118. ***Minois dryas bipunctatus*** **(Motschulsky, 1860)**

MATERIAL EXAMINED. 7 males, 1 female, Vladivostok, July 26 (AB, AM, TA, YO); 7 males, Brovnichi, July 28-29 (AM, TA, YO, TA); 2 males, 2 females, Kazanka, July 29 (AB, AM); 6 males, Lozovyi Range, Aug. 3-5 (AB, AM, TA); 3 males, 4 females, Lazurnyi, Aug. 7 (AB, YO).

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